

Confirmation No. 4584

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant:	MUTH	Examiner:	Amrany, Adi
Serial No.:	10/511,492	Group Art Unit:	2836
Filed:	October 15, 2004	Docket No.:	DE020097US (NXPS.266PA)
Title:	CIRCUIT ARRANGEMENT FOR GENERATING DC VOLTAGES		

REPLY BRIEF

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Dear Sir:

This is a Reply Brief submitted pursuant to 37 C.F.R. § 41.41(a)(1) for the above-referenced patent application. This Reply Brief is submitted in response to the Examiner's Answer dated June 10, 2010.

Authorization is given to charge/credit **Deposit Account 50-4019 (DE020097US)** all required fees/overages to enter this paper.

I. Status of Claims

Claims 1-17 stand rejected and are presented for appeal.

II. Grounds of Rejection

The grounds of rejection to be reviewed on appeal are as follows:

Claims 1-17 stand rejected under 35 U.S.C. § 103(a) over Applicant's admitted prior art ("APA", specification, page 1) in view of Kawaguchi (U.S. Patent No. 5,793,189).

III. Appellant's Reply Argument

1. The Examiner's Attempt To Ignore Functional Limitations Is Improper, And The § 103(a) Rejection Accordingly Fails To Establish Correspondence To Vehicular Circuit Components As Claimed.

The Examiner's Answer has attempted to deny patentable weight to Appellant's claim limitations by asserting that functional terms such as "configured" (as applied to circuit components) do not further limit the claim. The Examiner's Answer then goes on to assert that the cited '189 reference could be capable of performing in accordance with Appellant's claimed invention, presumably if modified, despite the lack of teaching or suggestion of such modification. Were the Examiner's position regarding circuit configuration correct, thousands of issued patent claims directed to combinations of circuit components in specific configurations would be rendered invalid. This attempt at denying patentable weight is improper under the M.P.E.P. and contradicts authoritative law, cited and discussed further below. The Examiner's assertions are further tantamount to an admission that the '189 reference (as combined) fails to establish correspondence under § 103(a).

As consistent with claim 1, aspects of Appellant's invention are directed to a specific vehicular circuit arrangement that generates at least two DC output voltages from at least one DC input voltage. This vehicular circuit includes a voltage regulator, a DC/DC converter and a logic circuit. The DC/DC converter converts a DC input voltage to a lower voltage. The logic circuit provides an on-off signal to the DC/DC converter in an idle state, and receives the DC input voltage (to power the logic circuit) when the DC/DC converter is switched off. As the Examiner has noted in the record that "APA" does not disclose the DC/DC converter

or logic circuit as claimed, the issue at hand is whether the '189 reference corresponds as asserted. As the Examiner's Answer has acknowledged that the '189 reference does not expressly disclose these limitations, instead relying upon assertions of what the '189 reference would be "capable of" doing if modified, the record has failed to establish correspondence under § 103(a).

More specifically, Appellant argued (in its Appeal Brief) that the rejection over the combination of "APA" with the '189 reference fails to establish teaching or suggestion of the claimed invention "as a whole" (§ 103(a)), as the rejection relies upon citation to individual circuit components that are neither configured nor arranged as claimed (*e.g.*, cannot function as claimed, and do not teach or suggest the same). Specifically, the proposed combination of references fails to disclose a vehicular circuit arrangement having a DC/DC converter and a logic circuit that both receive a DC input voltage, in which the DC/DC converter converts the DC input voltage to a lower voltage, and the logic circuit uses the DC input voltage as power when the DC/DC converter is switched off, as respectively relevant to Sections A and B of Appellant's Appeal Brief (the latter of which is discussed further in Section 2).

Referring to Figure 1 (copied below for convenience), Appellant noted that the '189 reference teaches that voltage VJ (*i.e.*, the asserted voltage the DC/DC converter converts to a lower voltage) is not the same as voltage VK (*i.e.*, the asserted voltage that powers the logic circuit). Appellant further argued that:

[the] rejection relies upon the erroneous assertion that the voltage provided at HVI (*i.e.*, the asserted DC input voltage) is the same as the voltage provided to input terminal ST (*i.e.*, the asserted logic circuit) because the voltage provided at HVI is equal to voltage VJ minus the voltage drop of diode 16 and the voltage provided to input terminal ST is equal to voltage VK minus the voltage drop of diode 18 (*see, e.g.*, Figure 1). **The Examiner's assertion, however, is premised upon the erroneous conclusion that the voltages VJ and VK at each of the corresponding diodes 16 and 18 are the same. The '189 reference clearly teaches that this is not the case.** For example, circuit 17 in Fig. 1 of the '189 reference is a voltage regulating circuit that changes the voltage VJ from a relatively high voltage to a relatively low voltage VK. *See, e.g.*, the Zener diode in circuit 17, which is used as a voltage regulator. The '189 reference explains this at Col. 6:51-56: "(t)he charge interface (I/F) circuit 11 includes a simplified constant voltage circuit 17...The simplified constant voltage circuit 17 outputs a DC voltage VK required for starting the DC-DC converter 6." It should therefore be clear that the Examiner's conclusion regarding the voltages VJ and VK being the same is erroneous. (emphasis added)

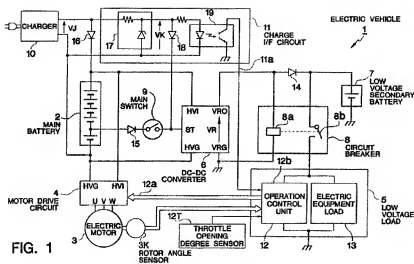


FIG. 1

Accordingly, the rejections failed to address the actual claim limitations which require that the voltage that powers the logic circuit be the same as the voltage that the DC/DC converter converts to a lower voltage, and the '189 reference itself (via highlighted portions above) appear to contradict the Examiner's assertions.

As discussed above, the Examiner's Answer attempts to address the above-identified failure in the rejections to address all claim limitations by asserting that claim limitations relating to the term "configured" do not further limit the claim. In tacit acknowledgement that the '189 reference fails to correspond to the claimed invention, the Examiner's Answer goes on to assert that the cited reference would somehow be capable of operating in accordance with the claimed invention, despite the fact that nothing in the reference teaches or suggests such operation or related configuration. The Examiner's Answer effectively admits that the proposed combination of references fails to disclose limitations to which patentable weight has been denied, including those directed to a logic circuit and DC/DC converter, and specific configuration and the logic circuit for operating relative to the state of the DC/DC converter.

In reply, Appellant submits that the Examiner's Answer improperly ignores functional limitations, which must be evaluated and considered with other limitations in the claim. As consistent with M.P.E.P. § 2173.05, terms reflecting a functional relationship between claimed components "means the claimed components must be connected in a way to perform a designated function." See, e.g., *Innova/Pure Water Inc. v. Safari Water Filtration*

Sys. Inc., 381 F.3d 1111, 1117-20 (Fed. Cir. 2004). Such terms take the full breath of their ordinary meaning, when the components “are arranged in a manner capable of performing the function.” *Id.* at 1120. This is also consistent with a recent decision by the USPTO Board of Appeals, which set forth the test for affording patentable weight to functional limitations as “whether the noted functional aspects are related to the clear-cut structure recited in the apparatus claim.” See *Ex parte* ROGER A. HANSEN, Appeal 2007-3424 (May 13, 2008), citing *In re Max Gulack*, 703 F.2d 1381 (Fed. Cir. 1983).

As applicable here, the Examiner provides no discussion regarding the relevance of the lack of a functional relationship in support of its decision to deny patentable weight to the noted claim terms. Instead, the Examiner’s Answer analyzes the individual circuit components of the claimed vehicular circuit in a vacuum, despite the clear recitation that the respective components must be configured to operate as claimed. Because the claimed aspects are related (a logic circuit and DC/DC converter, and the logic circuit is configured to operate relative to the state of the DC/DC converter), the noted claim terms must be accorded as having patentable weight – according to the test as explained by the Court of Appeals for the Federal Circuit and the USPTO Board of Appeals and Interferences.

The Examiner’s rejection is thus based upon an assertion that the ‘189 reference could somehow operate if reconfigured in accordance with the claimed invention; however, the issue is not whether something could function in accordance with the claimed invention, but rather whether the cited references teach or suggest the claimed invention. As discussed above and established in the (uncontroverted) record, nothing in the ‘189 reference discloses, teaches or suggests providing the same DC input power to a DC/DC converter and logic circuit as claimed. For example, the ‘189 reference is not configured to receive an input voltage under conditions as claimed (*e.g.*, claim 1 explicitly recites that the logic circuit is “further configured to receive the DC input voltage to power the logic circuitry”). The Examiner’s Answer has thus failed to establish that the ‘189 reference is actually configured to operate as claimed via connectivity, function or otherwise.

Accordingly, the § 103 rejection is improper and Appellant requests that it be reversed.

2. The Cited Combination Of References Fails To Disclose A Logic Circuit And DC/DC Converter Operating On A Common DC Input Voltage Used To Power The Logic Circuit When The DC/DC Converter Is Off.

The Examiner has erroneously failed to afford patentable weight to claim limitations involving a logic circuit that is “configured to receive the DC input voltage to power the logic circuitry when the DC/DC converter is switched off” as in claim 1, and has further failed to establish correspondence to the same. As consistent with Section 1 above and Appellant’s Appeal Brief, the rejection over the combination of “APA” with the ‘189 reference fails to establish teaching or suggestion of the claimed invention “as a whole” (§ 103(a)), as the rejection relies upon citation to individual circuit components that are neither configured nor arranged as claimed (*e.g.*, cannot function as claimed, and do not teach or suggest the same).

As applicable here, the proposed combination of references fails to disclose a vehicular circuit arrangement having a DC/DC converter and a logic circuit that both receive a DC input voltage, in which the logic circuit uses the DC input voltage as power when the DC/DC converter is switched off. The Examiner’s attempt to show correspondence relies upon citation to two mutually exclusive embodiments of Fig. 1 of the ‘189 reference (above), but fails to provide an (enabled) embodiment that corresponds to the claimed invention. In the first embodiment, a voltage VK is provided to input terminal ST of DC/DC converter 6 that is always on. In the second embodiment, the converter 6 is always off when the charger 10 is not connected. This second embodiment has apparently been asserted in an attempt to show correspondence to limitations in the claimed invention directed to the vehicular circuit’s operational characteristics when the claimed DC/DC converter is off. In short, the circuit shown in Figure 1 above is designed such that anytime the charger 10 outputs the charging DC power VJ, the DC/DC converter 6 is also on because the input terminal ST (*i.e.*, the asserted logic circuit) is active high (*see, e.g.*, column 6:40-65). Thus, the Examiner has failed to explain any situation in which the input terminal ST of the ‘189 reference receives the voltage VK and the DC/DC converter 6 is switched off (*i.e.*, if the voltage VK is present, the DC/DC converter 6 is necessarily switched on).

The Examiner’s Answer asserts that “[t]here is no requirement in the claim that the logic circuit always receives the DC input voltage.” The Examiner’s Answer goes on to

assert that the logic circuit on the '189 reference "is still 'configured to receive' the DC input voltage," apparently because the cited logic circuit is capable of receiving such a voltage if somehow connected to do so. The Examiner's Answer also asserts that the "vehicle is not always charging" and "sufficient voltage is supplied to the logic circuit to turn the DC/DC converter on."

In reply, Appellant submits that the Examiner's Answer erroneously ignores functional limitations, which is improper as discussed in Section 1 above (and incorporated herein). For example, as the logic circuit and its claimed operational functions are directly related to the DC/DC converter, the noted claim terms must be accorded patentable weight.

Appellant further submits that the Examiner's assertion, that the asserted "logic circuit (ST)" is capable of receiving an input voltage, fails because nothing in the cited references (alone or in combination) teaches or suggests how the asserted circuit would be connected to operate in this manner. The Examiner's Answer thus also appears to be based upon an assertion that the '189 reference could somehow function if reconfigured such that the asserted logic circuit would receive an input voltage when the DC/DC converter is off. As discussed above and established in the (uncontroverted) record, the '189 reference actually operates such that the DC/DC converter is on whenever the power is on, and fails to disclose any embodiment in which the DC/DC converter is switched off (and the asserted logic circuit is powered with the DC input voltage under such conditions), in accordance with the claimed invention. Regarding the Examiner's assertion that the "vehicle is not always charging" and "sufficient voltage is supplied to the logic circuit to turn the DC/DC converter on," Appellant submits that the provision of a "sufficient voltage" does not overcome the fact that the voltage VK is not provided.

Accordingly, the § 103 rejection is improper and Appellant requests that it be reversed.

3. The § 103(a) Rejection Of Claims 1-17 Is Improper Because The Cited References Fail To Disclose A Logic Circuit Configured To Provide An On-Off Signal To A DC/DC Converter In Response To An Idle State.

In its Appeal Brief, Appellant argued that the proposed combination of references (alone or in combination) fails to teach the claimed invention “as a whole” (§ 103(a)) including aspects related to *e.g.*, a logic circuit that is configured to provide an on-off signal to a DC/DC converter, in response to an idle state in which a set of circuit elements powered by the DC/DC converter is switched off. As consistent with the discussion in Section 2 above, the Examiner improperly bases the rejection upon aspects of two mutually exclusive embodiments of Fig. 1 of the ‘189 reference. In the first embodiment, voltage VK is provided to input terminal ST of converter 6, and in which the DC/DC converter 6 is always on when the voltage VK is provided (via charger 10). In the second embodiment, converter 6 is turned on or off in response to a battery voltage level (*e.g.*, for protecting against over-discharge of the battery) when the charger 10 is not connected. However, the converter 6 does not respond to the battery voltage level when the charger 10 is connected, and the rejection has failed to explain how these embodiments would be combined to operate together. More specifically, the Examiner hypothesizes that the DC/DC converter 6 in Fig. 1 of the ‘189 reference may be on or off when various circuit elements are also on or off, but the Examiner stops short of presenting evidence of how the DC/DC converter of the ‘189 reference is responsive to an idle state. While, the DC/DC converter 6 is turned on or off in response to a battery voltage level for protecting against over-discharge, this on/off response is based upon a battery voltage level and is in no way disclosed as being responsive to any idle state.

The Examiner’s Answer asserts that the ‘189 reference discloses that if “the headlights are left on, the voltage of the main battery will decrease to a dangerous low level and the DC/DC converter is turned off to protect the battery.” The Examiner’s Answer further asserts that “the state of the headlights can be detected by observing the voltage level of the battery.”

In reply, Appellant submits that the hypothetical embodiment that the Examiner relies upon, of observing the voltage level to detect the state of the headlights, fails to provide

correspondence as asserted. Specifically, the recitation in the '189 reference of headlights being left on is only one example of a situation in which the voltage level of the battery becomes low. This low battery level is in no way indicative of the state of the headlights; for example, if the headlights are left on and the battery is fully charged, the battery level should not be reduced immediately to such a low level. The Examiner's continued reliance upon mere possibilities, without citing any explicit teaching in the references that corresponds to the claimed invention, renders the § 103(a) rejections improper. Accordingly, Appellant requests that the § 103(a) rejection of claims 1-17 be reversed.

4. There Is No Motivation To Modify The Combination of Cited References As Asserted In The Examiner's Answer.

The § 103(a) rejection is also improper because the record lacks proper motivation for modifying and combining "APA" with the '189 reference as asserted. In stating that the '189 reference could operate to correspond as asserted, the Examiner's Answer has relied upon what would be a modification of the proposed combination of references for which evidence of motivation has not been established, contrary to the requirements of § 103(a), the M.P.E.P. and authoritative case law. *See, e.g., KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (U.S. 2007). The Examiner's Answer also attempts to assert that circuit regulator components in the '189 reference can somehow be modified to operate as a short circuit (without regulation). This proposed modification thus undermines the purpose of the '189 reference, which is also in contrast with the requirements of § 103(a) and relevant case law. *See, e.g., M.P.E.P. § 2143.01 and In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984).

As an example of this lack of motivation and referring to page 8 of the Examiner's Answer, the Examiner attempts to assert that the regulator 17 of the '189 reference can operate such that it does not regulate at all. Effectively, the Examiner is arguing that the regulator 17 ceases to operate and acts as a short circuit to pass received voltage. Appellant submits that this assertion is not only unsupported in the Examiner's Answer, it further contradicts the purpose of the '189 reference in effectively removing the regulator 17 from the circuit. Other assertions relying upon what the '189 reference could do similarly lack

evidence of motivation. Accordingly, there is no motivation in support of the § 103(a) rejection, which is improper and should be reversed.

5. The Examiner's Answer Impermissibly Introduces New Grounds Of Rejection, Which Also Fail To Correspond As Asserted.

In an attempt to address Appellant's arguments in its Appeal Brief regarding the lack of correspondence to a logic circuit and DC/DC converter that receive an input DC voltage as claimed, the Examiner's Answer has introduced new grounds of rejection, by introducing alternate grounds of rejection relying upon a new citation to Figure 5 in the '189 reference and related discussion. This reliance upon new grounds contradicts M.P.E.P. § 1208.01 and applicable law, in which "a 'ground of rejection' for purposes of Rule 1.192(c)(7) is not merely the statutory requirement for patentability that a claim fails to meet but also the precise reason why the claim fails that requirement." *See, e.g., Hyatt v. Dudas*, 551 F.3d 1307, 1312 (Fed. Cir. 2008); *see also In re Kronig*, 539 F.2d 1300, 1302 (CCPA 1976). Accordingly, it is not proper to materially change the precise reason for the rejection without acknowledging that such a change represents a new ground of rejection.

As applicable here, the Examiner's attempt to assert correspondence to the claimed invention relies upon new arguments regarding an internal configuration of a DC/DC converter and logic circuit, (asserted as items 63 and 61 of Figure 5). This embodiment shown in Figure 5 is completely separate from that in Figure 1, and explicitly indicated as such in the '189 reference, which introduces Figure 5 as "a circuit diagram showing a DC-DC converter different from that shown in FIG. 1."

Moreover, further discussion of Figure 5 at column 8:62 to 9:11 (and beyond) clearly requires that power is supplied to both of the components simultaneously. Nothing in Figure 5 would suggest that the transformer T21 (asserted as allegedly corresponding to the DC/DC converter input) can somehow be switched off when power is still supplied to transistor Q7 (asserted as allegedly corresponding to the powering logic circuitry). The Examiner's citation to Figure 5 and related discussion in the '189 reference thus not only fails to disclose limitations as claimed, it further appears to teach away from the same in connecting both T21 and Q7 to a common node.

Accordingly, absent reversal of all rejections and allowance of all claims for the reasons as presented herein (*e.g.*, due to the lack of correspondence), the § 103(a) rejections should also not stand on Appeal due to the Examiner's reliance upon new grounds of rejection. Moreover, the proposed new grounds of rejection fail to provide correspondence to the claimed invention as a whole (§ 103(a)), as the Examiner has not shown an (enabled) embodiment in which logic circuitry and a DC/DC converter receive a common DC input and do so under conditions in which the DC/DC converter is switched off. Appellant thus further submits that the § 103(a) rejections are improper and requests that the rejections be reversed.

IV. Conclusion

In view of the above, and the underlying Appeal Brief, Appellant submits that the rejections of claims 1-17 are improper and therefore requests reversal of the rejections as applied to the appealed claims and allowance of the entire application.

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